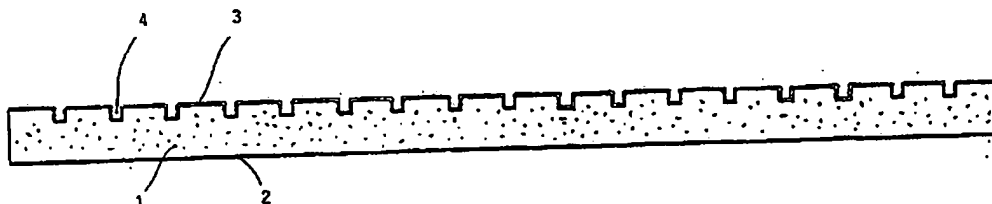


PCTWORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 : E04C 2/04	A1	(11) International Publication Number: WO 00/08271 (43) International Publication Date: 17 February 2000 (17.02.00)
(21) International Application Number: PCT/IB99/00911 (22) International Filing Date: 21 May 1999 (21.05.99) (30) Priority Data: PS98A000015 6 August 1998 (06.08.98) IT (71)(72) Applicant and Inventor: BACCHIELLI, Paolo [IT/IT]; Via Sangro, 15, I-61100 Pesaro (IT). (74) Agent: AGAZZANI, Giampaolo; Agazzani & Associati S.r.l., Via dell' Angelo Custode, 11/6, I-40141 Bologna (IT).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>

(54) Title: **PLASTERBOARD PANEL WITH GUIDES**

(57) Abstract

A plasterboard panel fit for covering elements of any dimension and shape, provided with an anterior wall and a posterior wall covered by a related cardboard sheet, anterior (2) and posterior (3), has equidistant parallel grooves (4) on the posterior wall of the panel fit to form linear sliding guides in correspondence with precise scorings made by means of a manual cutter, or with precise millings or cuts made by means of a miller or a portable electric saw, which have a support base provided with relieves fit to be inserted into the grooves (4). In a variant, the grooves (4) are made along two mutual perpendicular directions, in such a way to make a guiding grid (8). The panel is coupled with a grooved metal or plastic sheet (6) which is shaped for its joint insertion into the grooves (4) so making brackets for the dry linkage of the panel with the wall or with the adjacent panels.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon	KR	Republic of Korea	PL	Poland		
CN	China	KZ	Kazakhstan	PT	Portugal		
CU	Cuba	LC	Saint Lucia	RO	Romania		
CZ	Czech Republic	LI	Liechtenstein	RU	Russian Federation		
DE	Germany	LK	Sri Lanka	SD	Sudan		
DK	Denmark	LR	Liberia	SE	Sweden		
EE	Estonia			SG	Singapore		

PLASTERBOARD PANEL WITH GUIDES

5

TECHNICAL FIELD

The present invention relates to the production of finishing for building works. In particular the invention concerns a plasterboard panel for quickly carrying out during
10 installation the covering elements of any form and dimension, precisely shaped, using simple portable tools of common use. The invention also relates to a method for carrying out said panel.

15

BACKGROUND ART

The known plasterboard panels consist of a plaster mixture covered on both faces with a cardboard sheet, that gives the panel a suitable solidity and finish.

20

The panel is cut by scoring a covering cardboard sheet with a cutter and by suitably pressing and folding a part over the other. Since the breaking line follows the made incision, this latter must be traced with precision and for this reason it is necessary both to bring the wished measures onto the panel and to apply a bar by means of clamps, in
correspondence of the markings, to maintain the cutter inside the guide.

25

The main drawbacks of this cutting operation are both the waste of time occurring for every cut, and the inaccuracy of the obtained cut. Thus, the cutter is manually operated and can have some oscillations during the run, since the cutter is driven only by one side with consequent cut inaccuracy. The imperfections can be corrected by stuccoing
30 in case of walls and ceilings, while they are not tolerable in the furniture field.

The millings for bending the panel are much more difficult to carry out during installation: in this case a portable miller must be maintained perfectly closed to the bar, even if this miller is less handy than the cutter.

35

In the previous Italian Patent Application No.. PS98A 000009, filed on 22/06/98 by the same Applicant, it was described a plasterboard panel arranged with defined incisions and millings carried out during the realisation phase of the plasterboard panels, allowing to cut and to fold the panel quickly and precisely, with the measures and forms

which are often used.

However the increasingly wide usage of the plasterboard panels for replacing the traditional pargings and the consequent very different constructive needs, often not
5 allow to use the arranged elements of standard dimensions.

DISCLOSURE OF THE INVENTION

10 An object of the present invention is to allow a quick and precise realisation of covering elements of any shape and dimension, variously angled, directly during installation using common and economic tools easily available in the market.

A second object is to unify the panel production, by replacing a plurality of differently
15 predisposed boards with a single universal element from which any dimension and shape can be obtained.

The panel in object has, on the back side, thin parallel and regularly distanced grooves, which can be used as a guide for making precise scores, also of considerable length, by
20 means of a simple manual cutter, or millings by means of a portable miller, equipped with a support base of corresponding shape, or cuts by means of a portable electric saw, with a shaped support base.

The grooves can be done during installation, in order to leave integral the covering
25 cardboard, or can be made subsequently onto common plasterboard panels. These grooves can be drawn in one direction, or in two mutual perpendicular directions, in order to form a guiding grid.

30 BRIEF DESCRIPTION OF THE DRAWINGS

The above described objects are obtained in accordance with the content of the claims.

The characteristics of the invention are evidenced in the following enclosed drawing
35 tables in which:

- figure 1 shows a transversal section view of a panel with covered grooves, prepared during installation;
- figure 2 shows a sectioned panel of the same type of figure 1, after milling at 45 ° per each side;

- figure 3 shows a panel section with subsequently scored grooves, interrupting the covering rear sheet;
- figures 4 and 5 show two panel portions, of different dimensions, quickly and precisely separated from the grooved plasterboard sheet by means of a common manually operated cutter;
- figures 6, 7, 8 and 9 show some covering elements of different dimensions and shapes, drawn from the same grooved sheet, manually scored in correspondence with one or more grooves;
- figure 10 shows a covering element with rounded angle, drawn from the sheet of figure 11;
- figure 12 shows a grooved metal sheet, which can be coupled with the plasterboard panel grooves, to make brackets for the dry connection of the panels, or stiffening elements, for instance in correspondence with self-threading screws;
- figure 13 shows a schematic axonometric view of a panel variant;
- figures 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25 and 26 show other examples of covering elements variously shaped, easily obtainable from the panel in object.

BEST MODE OF CARRYING OUT THE INVENTION

In figures 1, 2 and 3, with reference 1 is indicated the chalky layer of the panel, with 2 the anterior covering sheet and with 3 the posterior covering sheet. The reference 4 indicates the parallel grooves, uniformly outdistanced, which score the back portion of the panel, and which act as guide, for example, for the manual cutter so that the panel can be precisely cut, without putting guiding bars by means of related clamps.

The grooves 4 can also act as guide for a milling equipment or a portable miller, provided with a support base with rises fit to be inserted into the same grooves: in this way the panel can be milled during installation with precision, as for instance in figure 2, where the reference 5 indicates a milling fit to allow the panel to be fold at right angle.

The miller is adjusted in order to leave integral the anterior covering sheet, which maintains jointed the two parts to be folded up. Changing the miller, is obviously possible to carry out millings of other forms, to realise covering elements variously shaped, as for instance those represented in the figures 14-26.

The plasterboard elements so obtained, being perfectly finished also in correspondence of the folding, can be used for covering walls, in substitution of the traditional parging,

or for covering columns, angled elements, false ceiling and similar elements.

The guiding grooves 4 also allow the realisation of precise cuts 7 as indicated in figure 11, in order to curve the panel, for instance at rounded angle as illustrated in figure 10.

5 In order to make these cuts a portable electric saw can be used, with the support base provided with guides insertable into the grooves 4, for a linear sliding of the tool.

10 The possibility of making precise workings on the panel with portable tools allows the execution during installation of the desired coverings, of any dimension and shape, avoiding the movement of large sheets, exclusively inserted into the big equipment of fixed plants.

15 These grooves 4 allow the usage of small tools usable during the installation (at the yard) and therefore the realisation of custom-made elements provided with the desired shapes directly at the yard, otherwise carrying out in a factory with wide dimension fixture.

20 The plasterings of the sighting parts are not more necessary, especially at the angles, because the sight surface of the plasterboard panel remains integral or at least is provided with distinct and precise cuts so that the panel plastering is unnecessary: this fact cause both a perfect laying of the plasterboard and a remarkable time saving during laying.

25 The grooves 4 allow a better setting for the adhesive plaster, or an effective dry fixing of the panels, by means of joint application of a grooved metal or plastic sheet 6, shown in figure 12, acting as connecting or reinforcement bracket, for instance in correspondence of self-threading screws for the panel junction with the wall or with adjacent panels.

30 The panel grooves 4 can be variously outdistanced and have rectangular, triangular, generally polygonal section, or rounded form.

35 A variant of the panel is schematically illustrated in figure 13 in which the guiding grooves 4 are made along two mutual perpendicular directions, in order to form a guiding grid 8.

In a further embodiment of the panel, the posterior covering sheet 3, which is on the posterior grooved side, covers the inside portions of the grooves 4, or stops in correspondence thereof, or covers these latter on the surface, remaining flat.

It must be advantageously observed that in correspondence of the cardboard millings or cuts, the used miller or cutter do not cause any "burr" or "scraps" collection near to the posterior cardboard sheet because the cut is made in correspondence of the grooves 4 as
5 can be clearly seen in figure 2.

In other words, in particular in correspondence of the millings comprised between 30° and 110°, in the posterior wall of the cardboard, no scraps are generated because the edges of the cuts made in this way, reach the base of the related grooves 4, often
10 without the cardboard layer, which allow the possible scrap housing so avoiding any interference or any width increasing in correspondence with the angled folding of the plasterboard.

The realisation method of the panels, object of the invention, comprises:

- 15 - the extrusion of the chalky mixture 1 shaped as panel having an anterior and a posterior wall;
- the realisation of guiding grooves 4 mutually parallel and outdistanced on the posterior wall;
- the covering of the posterior wall with a cardboard sheet 3 disposed between the
20 grooves;
- the covering of the anterior wall with a cardboard sheet 2.

The method further comprises the covering of the posterior wall of the plasterboard panel with a cardboard sheet complementarily shaped in respect of the same posterior
25 wall.

The use of such plasterboard panel is very easy because the operator, after the regulation of the incidence angle and of the milling cut depth, must only place the relieves projecting from the shaped base of the miller into the corresponding grooves 4
30 of the panel.

In such a way the operator can made the guided sliding of such miller and made the desired millings and/or grooves on the panel posterior wall.

CLAIMS

- 1) Plasterboard panel with guides, fit for covering elements of any dimension and shape, having an anterior and a posterior wall covered by a related cardboard sheet (2) and (3), said panel being characterised in that is provided with equidistant parallel grooves (4) on the posterior wall of said panel, which are guides for the linear sliding in correspondence of making precise scorings by means of a manual cutter, or precise millings, or cuts, by means of a miller or a portable saw, which are provided with a support base with rises fit to be inserted into said grooves (4).
- 2) Panel according to claim 1 characterised in that said posterior covering sheet (3) covers both the posterior wall of said panel and also the interior of said grooves (4) or is interrupted in correspondence of said grooves (4) or covers the surface of said posterior wall which remains flat.
- 3) Panel according to any one of the preceding claims characterised in that said grooves (4) can be variously outdistanced and have the transversal section of rectangular, triangular, generally polygonal, or rounded shape.
- 4) Panel according to any one of the preceding claims characterised in that said grooves (4) are made along two mutual perpendicular directions, in order to make a guiding grid (8).
- 5) Panel according to any one of the preceding claims characterised in that said panel is coupled with a grooved metal or plastic sheet (6) which is shaped for being inserted into said panel grooves (4), in order to make brackets for the dry linkage of at least one panel.
- 6) Method for the realisation of plasterboard panels, fit for covering elements of any dimension and shape, each panel being made with a chalky mixture (1), and having an anterior and a posterior wall, said method being characterised in that includes:
- extrusion of said chalky mixture (1) shaped as panel having said anterior and posterior wall;
 - realisation of guiding grooves (4) mutually parallel and equidistant on said posterior wall;
 - covering of said posterior wall with a posterior cardboard sheet (3);
 - covering of said anterior wall with a anterior cardboard sheet (2).
- 7) Method according to claim 6 characterised in that said posterior wall covering is

made with a posterior cardboard sheet (3) complementarily shaped with the same posterior wall.

- 5 8) Method according to claim 6 characterised in that said posterior wall covering is made with a posterior cardboard sheet (3) disposed in order to cover the portions between said guiding grooves (4).
- 10 9) Method according to claim 6 characterised in that said covering of the posterior wall is made with a posterior cardboard sheet (3) disposed in order to flat cover the posterior wall of said panel.
- 10) Method according to claim 6 characterised in that said grooves (4) are made along two mutual perpendicular directions in order to form a guiding grid (8).
- 15 11) Method according to claim 6 characterised in that the posterior wall of said panel is coupled with a grooved metal or plastic sheet (6) shaped for the joint insertion into the grooves (4) to make brackets for the dry linkage of at least one panel with the wall or with the adjacent panels.

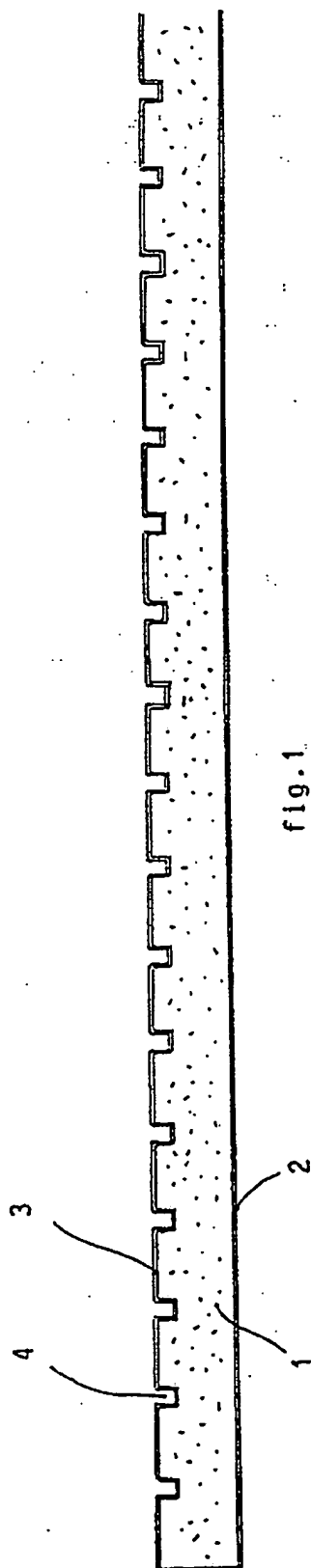


fig.1

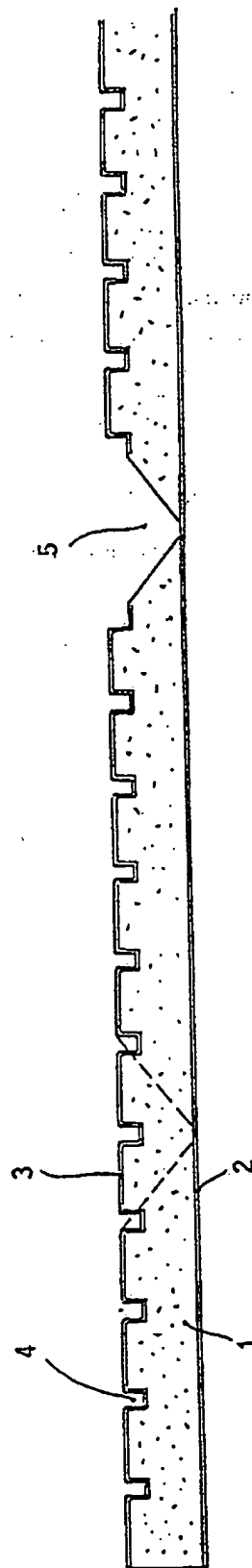


fig.2

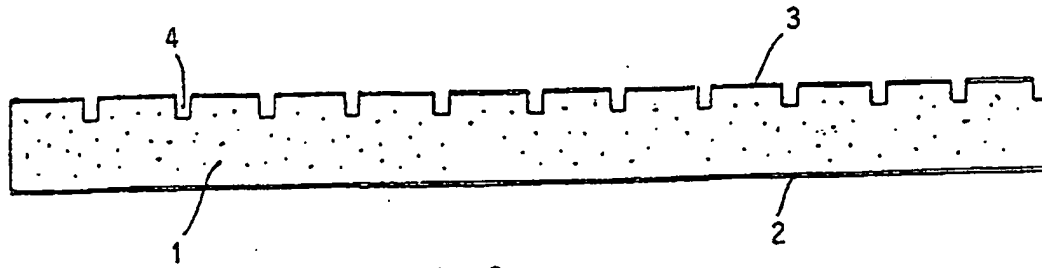


fig.3

fig.4



fig.5

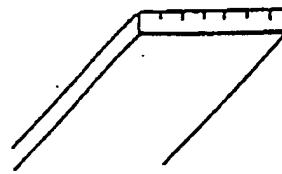


fig.6

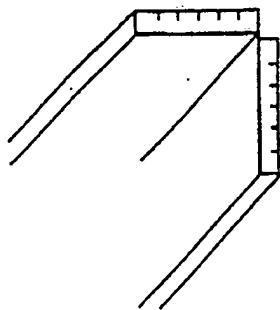


fig.7

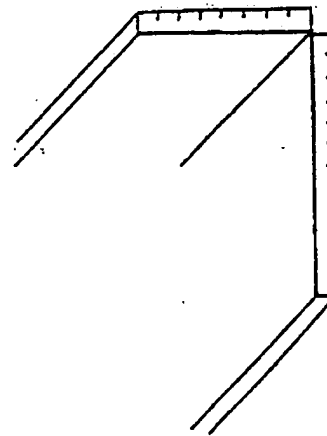


fig.8

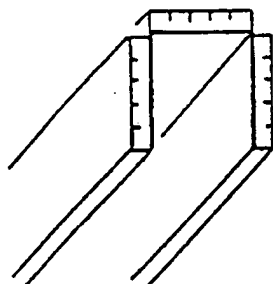
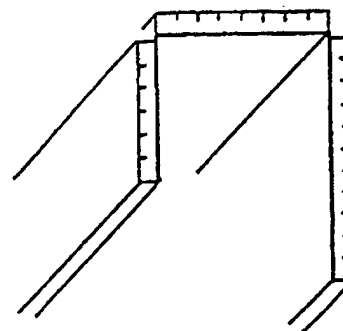


fig.9



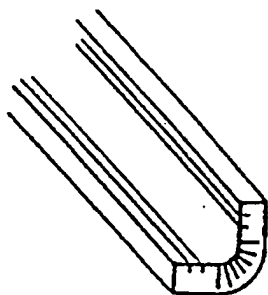


fig. 10

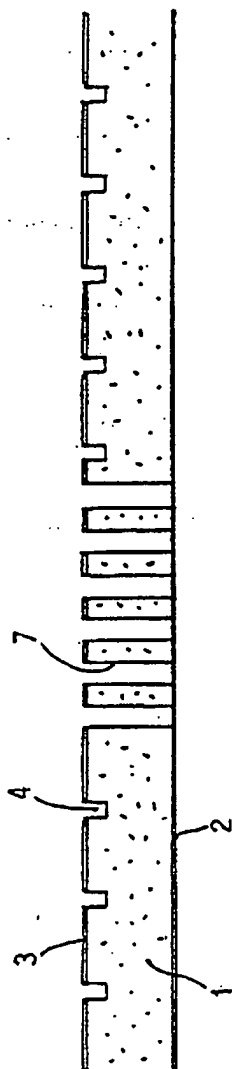


fig. 11

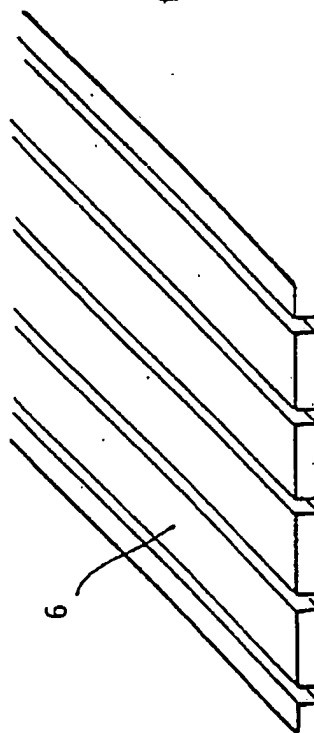


fig. 12

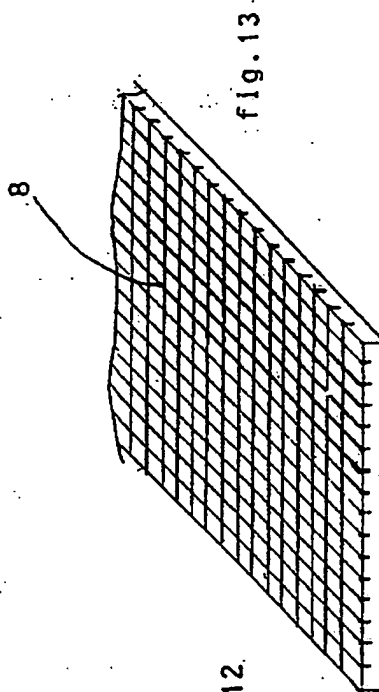
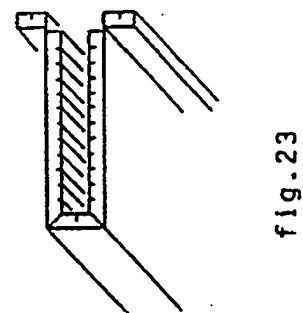
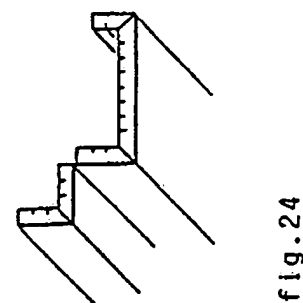
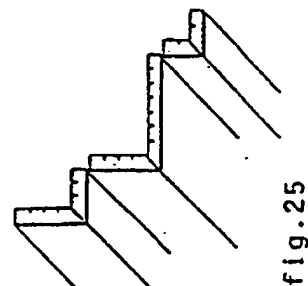
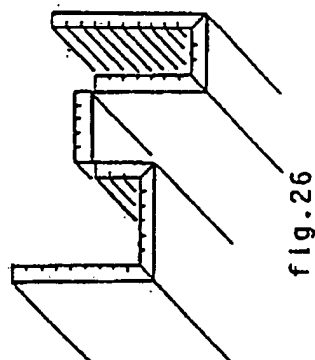
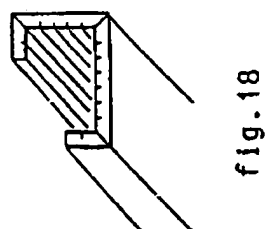
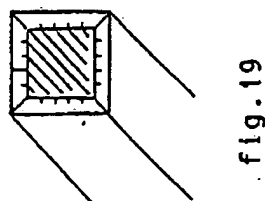
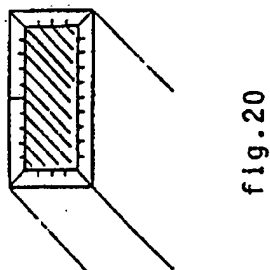
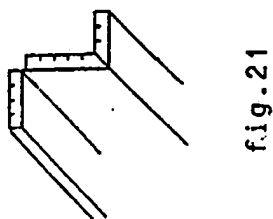
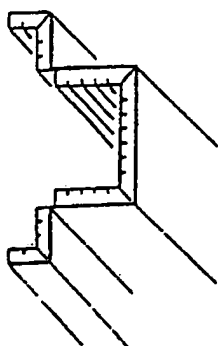
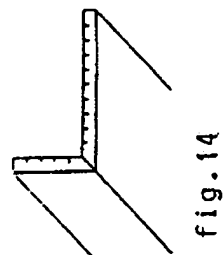
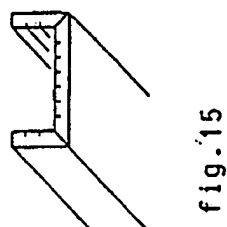
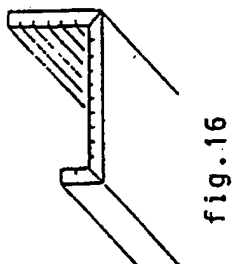
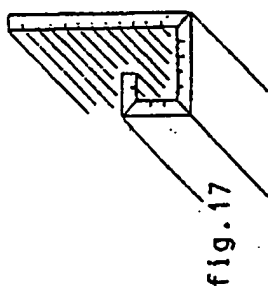


fig. 13

8



INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 99/00911

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 E04C2/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 E04C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 96 21779 A (SESAMO S.A.S. DI SINIBALDI & C.) 18 July 1996 (1996-07-18) page 4, line 26 - page 5, line 5; claim 1; figure 1	1
A	DE 811 289 C (KULT) 14 June 1951 (1951-06-14) the whole document	1,3,6

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

30 August 1999

Date of mailing of the international search report

06/09/1999

Name and mailing address of the ISA
European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Mysliwetz, W

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IB 99/00911

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9621779 A	18-07-1996	IT PS950001 A AU 4313796 A	11-07-1996 31-07-1996
DE 811289 C		NONE	

